Claims

1. Use of a DNA expression construct operable in eucaryotic cells for the production of a vaccine for intradermal injection for eliciting of a type 1 cellular mediated immune response, where said DNA expression construct is a covalently closed linear deoxyribonucleotide molecule comprising a linear double stranded region, where the single strands forming the double strand are linked by a short single stranded loop consisting of deoxyribonucleotides, where said double strand forming single strands only consist of the coding sequence under control of a promoter that is operable in the animal that is to be vaccinated, and a terminator sequence and the DNA expression construct is linked covalently to one or more oligopeptides to increase transfection efficacy.

2. Use of the DNA expression construct according to claim 1, where said construct encodes the hepatitis small surface antigen (HBsAg).

3. Use of the DNA expression construct according to one or more of the preceding claims, where the oligopeptide is of a length of five to 25 amino acids and at least half of the amino acids are a member of the group consisting of lysine and arginine.

4. Use of the DNA expression construct according to claim 3, where the oligopeptide comprises a nuclear localisation sequence.

5. Use of the DNA expression construct according to claim 3 or 4, where the oligopeptide comprises the sequence PKKKRKV (proline - lysine - lysine - lysine - arginine - lysine - valine).

6. Use of the DNA expression construct according to claim 3 or 4, where the oligopeptide comprises the sequence YGRKKRRQRRR.

7. Vaccine for intradermal injection to elicit a type 1 cellular

mediated immune response employing the DNA expression construct according to claims 1 to 6.

8. Vaccine according to claim 7, where the vaccine is present in solution.

9. Vaccine according to claim 7 and 8 for the application in human beings.

10. Use of a DNA expression construct operable in eucaryotic cells for the production of a vaccine for intradermal injection for eliciting of a type 1 cellular mediated immune response, where said construct encodes one or more antigens under control of a promoter sequence and the DNA expression construct is linked covalently to one or more oligopeptides to increase transfection efficacy.

11. Use of the DNA expression construct according to claim 10, where the immunizing polynucleotide sequences are present in the form of expression constructs that consist of covalently closed linear deoxyribonucleic acid molecules, which comprise a linear double stranded region, where the single strands forming the double strand are linked by a short single stranded loop consisting of deoxyribonucleotides, where said double strand forming single strands only consist of the coding sequence under control of a promoter that is operable in the animal that is to be vaccinated, and a terminator sequence.

12. Use of the DNA expression construct according to claim 10 or 11, where said construct encodes the hepatitis small surface antigen (HBsAg).

13. Use of the DNA expression construct according to one or more of the preceding claims, where the oligopeptide is of a length of five to 25 amino acids and at least half of the amino acids are a

member of the group consisting of lysine and arginine.

14. Use of the DNA expression construct according to claim 13, where the oligopeptide comprises a nuclear localization sequence.

15. Use of the DNA expression construct according to claim 13 or 14, where the oligopeptide comprises the sequence PKKKRKV (proline - lysine - lysine - lysine - arginine - lysine - valine).

16. Use of the DNA expression construct according to claim 13 or 14, where the oligopeptide comprises the sequence YGRKKRRQRRR.

17. Vaccine for intradermal injection to elicit a type 1 cellular mediated immune response employing the DNA expression construct according to claims 10 to 16.

18. Vaccine according to claim 17, where the vaccine is present in solution.

19. Vaccine according to claim 17 for the application in human beings.

20. Vaccine according to claim 18 for the application in human beings.